

PROJECT NUMBER: 1810  
PROJECT TITLE: Project ART  
PROJECT LEADER: Ravi Prasad  
PERIOD COVERED: July, 1988

#### PROJECT ART

- A. Objective: To support the Commercial Design and the Flavor Development activities at the Bermuda Hundred Pilot Plant.
- B. Results: Further testing with 8% citric acid on stems confirmed improved absorption efficiency compared to control with 12% monopotassium citrate on CRS. Other advantages of citric acid include a directional improvement in filler and stem subjectives, operational ease of handling, and potential for stem usage reduction.

Preliminary results on corrosion testing of citric acid on 316 L stainless steel and inconel 600 indicate potential problems with stress corrosion cracking. Because of the test results indicating potential for erosion, a piece of metal was cut from the pilot plant stem basket for inspection. It was found to have no evidence of corrosion. However, all testing of citric acid in the pilot plant was stopped pending further evaluation of corrosion potential.

Separate clump making tests were completed, as requested by PM Engineering, to evaluate clump handling equipment for post-ART filler and stems. Generally, CRS absorber clumps more and provides higher pressure drop than the filler. However, due to the small particle size, the CRS clumps break up more readily than filler, with no need for any declumping/separating devices.

A series of runs was initiated to investigate lower AB level on DL blend filler. As expected, lower AB level results in a lowering of nicotine extraction, e.g., 88% nicotine removal @ 0% AB, 96% @ 1.6% AB, 97% @ 2.5% AB.

Pilot plant was shut down for maintenance and relief valve inspection during the week of July 11, 1988. All scheduled maintenance was completed, including the installation of new o-rings in the vessels and in the p-transmitters. The start up after maintenance activity was satisfactory, except for one relief valve malfunction. Corrective action is underway.

Two tests were completed to simulate the commercial plant CO<sub>2</sub> recovery process in order to quantify the tobacco wax level remaining on the extracted filler. Analytical results will be transmitted to the Flavor Group.

- C. Plans: Complete the tests on AB addition level in the range of 0% to 2.5% AB in order to allow the subjective evaluation of the extracted filler. Continue to support the Flavor and Product Development activity.

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